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OCT 1998

October 13, 1998

BY HAND DELIVERY

Ms. Magalie Roman Salas
Office of the Secretary
Federal Communications Commission
1919 M Street, N.W., Suite 222
Washington, D.C. 20554

Re: WT Docket No. 98-136

Dear Ms. Salas:

Attached for filing please find an original and four copies of the Reply Comments of Hughes Communications, Inc. in the above-referenced rulemaking. Thank you.

Sincerely,

Arthur S. Landerholm

Arthur S. Landerholm
of LATHAM & WATKINS

Enclosures

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Amendment to Part 27 of the Commission's Rules to Revise Rules for Services in the 2.3 GHz Band and To Include Licensing of Services In the 47 GHz Band	)	WT Docket No. 98-136

REPLY COMMENTS OF HUGHES COMMUNICATIONS, INC.

Hughes Communications, Inc. ("HCI") submits these Reply Comments in response to the initial comments received by the Commission in its above-captioned Notice of Proposed Rulemaking ("NPRM"), which relates to the 47.2 - 48.2 GHz band (the "47 GHz band").

On the whole, the comments filed in response to the NPRM are noteworthy for their lack of specificity about the technical parameters of the HAPS and traditional terrestrial fixed services that might be provided in the 47 GHz band. Indeed, there seems to be a general consensus that there is a paucity of information at this time about the system parameters of the fixed service systems that might inhabit the 47 GHz band.[1] The lack of specificity and information about the HAPS and traditional terrestrial fixed services that might be provided in the 47 GHz band, in contrast to the numerous detailed and significant 47 GHz satellite proposals

[1] *See* Comments of Sky Station International, Inc. at 14; Comments of Angel Technologies Corporation at 7; NPRM at ¶ 119.

on file with the Commission, again call into question the Commission's determination that the likely dominant use of the 47 GHz band is the HAPS service.

The lack of information also means that the method by which the Commission should manage in-band interference is not sufficiently developed at this time. This in-band interference problem, in particular, and the lack of information, more generally, counsel against moving forward rapidly with an auction of the 47 GHz band. In fact, there is considerable technical study and preparatory work that the potential licensees of the 47 GHz must complete, and present to the Commission, before licensing of the 47 GHz band in the flexible manner proposed by the Commission should go forward.

One of the core points that HCI raised in its Comments in this proceeding is that the Commission's proposed service rules for the 47 GHz band are insufficient to protect against interference between licensees of adjacent REAGs. Although HCI focused primarily on HAPS/satellite interference, the comments indicate that this is an issue that applies generally to *all adjacent licensees at 47 GHz*. As the Commission is well aware, in order for the Commission's plan for flexible use of the 47 GHz band to succeed, the service rules for the 47 GHz band must prevent interference between co-frequency, geographically adjacent 47 GHz licensees while permitting both licensees to maintain a viable service offering. Understandably, no commenter presented a technically complete or convincing solution for the in-band interference problem, due to the lack of available information.

Angel Technologies Corporation dealt only with the question of interference between the traditional fixed wireless service and HAPS providers,[2] and even then concluded

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[2] *See* Comments of Angel Technologies Corporation at 8.

that "it is currently difficult to assess the interference environment in the [47 GHz] band given the limited number of existing 47 GHz systems."[3] While Angel Technologies presented an interesting approach to the question of co-frequency, coterminous FS/HAPS sharing, as demonstrated in HCI's comments,[4] the elevation angle discriminator proposed by Angel Technologies will not protect a geographically adjacent satellite licensee from interference from a HAPS transmitter.

Sky Station International, Inc. proposed a general coordination approach, but appears to have considered only the FS/HAPS interference question.[5] In any event, Sky Station's proposal -- to use a general coordination approach for all transmitters within 200 km on either side of a REAG boundary -- is unworkable given the nature of many of the satellite systems, as well as the HAPS system, proposed for the 47 GHz band. Coordination of a large number of earth stations or transmitters in the large border area suggested by Sky Station would jeopardize the economic feasibility of these types of satellite networks, and seemingly, a HAPS system, as well. For example, using the Sky Station proposal as a baseline, a HAPS licensee serving Philadelphia would have to coordinate each of its user terminals -- whether fixed, portable or mobile -- located in that city with a satellite licensee seeking to serve Baltimore, as those cities are only about 170 km apart, but are in separate REAGs. In fact, based on the technical study submitted by HCI in its Comments, if the Commission adopted a coordination

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3 *Id.* at 7.

4 *See* Comments of Hughes Communications, Inc. at Technical Appendix p. 1-2, Figure 1.

5 *See* Comments of Sky Station International, Inc. at 14 ("the dominant interference scenario occurs when the main-beam of the fixed service system is pointing directly at the HAPS, . . .")

approach, the coordination area would have to be approximately 425 km on either side of a REAG boundary to protect satellite networks from interference from adjacent licensees, which larger coordination area would only exacerbate the coordination difficulties.[6]

Sky Station also recommended that the Commission abstain from using a power flux density limit to manage in-band interference.[7] HCI agrees with Sky Station that pfd limits may be problematic, and further study is clearly needed on this approach to in-band interference control. While Sky Station approached the pfd limit question from the perspective of their "downlink,"[8] HCI is concerned about the impact of a pfd limit on satellite uplinks. HCI's satellite applications propose to uplink in the 47 GHz band through earth stations that emit narrowly focused beams, as compared to wide area or omnidirectional transmissions from HAPS platforms. Obviously, these uplink transmissions require sufficient power to "close the link" with the satellite in geostationary orbit and a pfd limit set at the wrong level will prevent HCI's satellite systems from closing its uplinks and offering service.

In some sense, the absence of a technologically workable proposal for managing in-band interference at this time is understandable: satellite/HAPS sharing studies are incomplete, no traditional fixed wireless service provider has expressed interest -- via a service proposal or otherwise -- in the 47 GHz band, and FS/HAPS sharing studies seem to be non-existent. As the Commission stated in its NPRM, "[b]ecause development of services and technologies that will use this band is just beginning, we do not have reliable information at this

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[6] *See* Comments of Hughes Communications, Inc. at Technical Appendix, Table 1, Figure 2.

[7] Comments of Sky Station International, Inc. at 15

[8] *Id.*

time on the technical parameters for services that will be offered."[9] Sky Station, like Angel Technologies, seems to concur: "[a]t this time there is insufficient operating information on system parameters in the 47 GHz band for fixed service systems."[10]

The absence of sufficient "operating information on system parameters" and the unresolved nature of the in-band interference issues counsel strongly against setting the 47 GHz band for auction in the first quarter 1999. In fact, these open issues highlight the substantial amount of technical study that remains to be completed or initiated for that matter, before the Commission can make an informed decision about the service rules most appropriate for the 47 GHz band. In light of the need for significant further study, the Commission should, as Lockheed Martin suggested,[11] request a more definitive technical proposal from those with interest in the 47 GHz band.

* * * *

HCI identified in its comments a specific, and significant, potential for in-band interference between adjacent satellite and HAPS licensees. No commenter identified a solution for this problem. In fact, the other comments, by demonstrating the lack of sufficient information about the technical parameters of the fixed users of the 47 GHz band, have shown that the in-band interference problem may apply to all potential adjacent licensees. At bottom, there is significant work, by industry and the Commission, that remains to be done before the Commission's flexible licensing proposal can reasonably be implemented in the 47 GHz band.

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9 NPRM at ¶ 119.

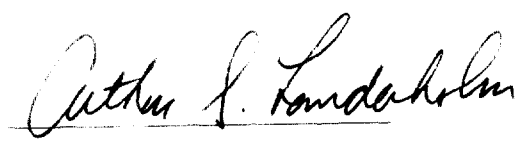
10 Comments of Sky Station International, Inc. at 14.

11 Comments of Lockheed Martin Corporation at 14.

Rushing to auction the 47 GHz band before this work can be completed would likely hamper the efficient licensing and development of the 47 GHz band

Respectfully submitted.

HUGHES COMMUNICATIONS, INC.



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